

**What is claimed is:**

1. An Internet connection system, comprising:

a relay device connected to a client device and provided in a first network, the first network communicated in a first protocol; and

5 a server connected to the relay device through a second network in a second protocol,

wherein the relay device comprises:

a client device global address storage section for storing a global address of the client device in the first protocol;

10 a server address storage section for storing a global address of the server in the second protocol;

a first routing device for routing a connection from the client device through the server based on the global address of the server stored in the server address storage section; and

15 a first packet processing device for capsulating/decapsulating packets, the packets being in the first protocol, using the second protocol to thereby establish a tunneling connection with the server in the first protocol,

and wherein the server comprises:

20 a second packet processing device for capsulating/decapsulating packets, the packets being in the first protocol, using the second protocol to thereby establish a tunneling connection with the relay device;

a client device global address management device for managing the global address of the client device in the first protocol, the client device connected to the relay device, in association with a global address of the relay device in the second protocol;

25 and

a second routing device for routing a connection to the relay device based on the global address of the client device managed by the client device global address management device.

5        2.        The Internet connection system of Claim 1, wherein  
                 the first and second protocols are different.

3.        The Internet connection system of Claim 1, wherein  
                 the first and second protocols are the same.

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4.        The Internet connection system of Claim 1, wherein  
                 the server further comprises a model identification section for determining if the  
client device is of a predetermined model and/or the relay device is of a predetermined  
model.

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5.        The Internet connection system of Claim 4, wherein  
                 the server further comprises a communication session disconnection section for  
disconnecting communication sessions or limiting packet transmissions if the model  
identification section determines that the client device or the relay device is not of the  
predetermined model.

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6.        The Internet connection system of Claim 4, wherein  
                 the server further comprises a command conversion section for converting a  
command to be sent to the client device to a command in a predetermined format to  
control the client device based on results from the model identification section.

7.        The Internet connection system of Claim 4, wherein

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                 the server further comprises a client device control section for controlling the  
client device based on results from the model identification section.

8. The Internet connection system of Claim 1, wherein  
the server further comprises a network type identification section for determining  
if an environment of the first network connected with the client device and/or the relay  
device is of a predetermined type.

5 9. The Internet connection system of Claim 8, wherein  
the server further comprises a communication session disconnection section for  
disconnecting communication sessions or limiting packet transmissions if a private  
network environment connected with the client device or the relay device is determined  
not of the predetermined type.

10 10. The Internet connection system of Claim 9, wherein  
the server further comprises a state information obtaining section for obtaining at  
least one of an operation state, a usage state, and location information of the client device  
and/or the relay device.

11. The Internet connection system of Claim 10, wherein  
15 the state information obtaining section obtains at least one of the operation state,  
the usage state, and the location information of the client device using a method  
according to a model of the client device.

12. The Internet connection system of Claim 10, wherein  
the server further comprises a search section for searching for the client device or  
20 the relay device based on at least one of the global address, the operation state, the usage  
state, and the location information of the client device or the relay device.

13. The Internet connection system of Claim 11, wherein  
the search section comprises a means for displaying a list of the client devices  
connected to each of the relay devices.

25 14. The Internet connection system of Claim 13, wherein

the server further comprises a client device control section for controlling the client device, which selects a specific client device from the list to thereby activate a control program for the specific client device.

15. The Internet connection system of Claim 1, wherein

5 the server further comprises a client device address search section for searching for the global address of the client device in the first protocol based on a connection request to the client device.

16. The Internet connection system of Claim 15, wherein

10 the server further comprises a connection requester authentication section for authenticating a user who requested a connection to the client device to thereby permit or deny the connection to the client device.

17. The Internet connection system of Claim 1, further comprising:

a tunneling connection information management device for managing information of the tunneling connection between the relay device and the server, wherein

15 the tunneling connection information management device sends a notification to the relay device of the global address of the server in the second protocol, and sends a notification to the server of the global address of the relay device in the second protocol and of an entirety or part of the global address of the client device in the first protocol.

18. The Internet connection system of Claim 17, wherein

20 the tunneling connection information management device authenticates the relay device or the server to obtain an authentication result and, if the authentication result is positive, sends the notification.

19. The Internet connection system of Claim 1, wherein

25 the server further comprises a filtering processing device for filtering communications to/from the client device according to predetermined rules.

20. The Internet connection system of Claim 19, wherein

the server further comprises a filtering rule setup section for providing an interface for editing the predetermined rules.

21. The Internet connection system of Claim 1, wherein  
the relay device further comprises a model identification section for determining  
5 if the client device is of a predetermined model.

22. The Internet connection system of Claim 21, wherein  
the relay device further comprises a communication session disconnection section  
for disconnecting communication sessions if the model identification section determines  
that the client device is not of the predetermined model.

10 23. A relay device, used in an Internet connection system which comprises: the relay  
device connected to a client device and provided in a first network, the first network  
communicated in a first protocol; and a server connected to the relay device through a  
second network in a second protocol, comprising:

15 a client device global address storage section for storing a global address of the  
client device in the first protocol;

a server address storage section for storing a global address of the server in the  
second protocol;

a first routing device for routing a connection from the client device through the  
server based on the global address of the server stored in the server address storage

20 section; and

a first packet processing device for capsulating/decapsulating packets, the packets  
in the first protocol, using the second protocol to thereby establish a tunneling connection  
with the server in the first protocol.

24. A server, used in an Internet connection system which comprises: a relay device  
25 connected to a client device and provided in a first network, the first network

communicated in a first protocol; and the server connected to the relay device through a second network in a second protocol, comprising:

a second packet processing device for capsulating/decapsulating packets, the packets in the first protocol, using the second protocol to thereby establish a tunneling connection with the relay device;

a client device global address management device for managing a global address of the client device in the first protocol, the client device connected to the relay device, in association with a global address of the relay device in the second protocol; and

a second routing device for routing a connection to the relay device based on the global address of the client device managed by the client device global address management device.

25. A server, used in an Internet connection system which comprises: a relay device provided in a first network; and the server connected to a client device through the relay device and the Internet, the client device connected to the first network, comprising:

a client device address management device for managing an address of the client device connected to the relay device in association with an address of the relay device;

a routing device for routing a connection, the connection from the Internet to the client device, to the relay device connected to the client device based on the address of the client device managed at the client device address management device;

a model identification section for determining if the client device is of a predetermined model and/or the relay device is of a predetermined model; and

a command conversion section for converting a command to be sent to the client device to a command in a predetermined format to control the client device based on results from the model identification section.

26. The server of Claim 25, further comprising:

a communication session disconnection section for disconnecting communication sessions or limiting packet transmissions if the model identification section determines that the client device or the relay device is not of the predetermined model.

27. The server of Claim 25, wherein

5 the client device includes a peripheral device which is communicable with the relay device but cannot by itself connect to the Internet.

28. The server of Claim 25, further comprising:

10 a network type identification section for determining if an environment of the first network connected with the client device and/or the relay device is of a predetermined type.

29. The server of Claim 28, further comprising:

a communication session disconnection section for disconnecting communication sessions or limiting packet transmissions if a private network environment connected to the client device or the relay device is determined not of the predetermined type.

15 30. The server of Claim 25, further comprising:

a state information obtaining section for obtaining at least one of an operation state, a usage state, and location information of the client device and/or the relay device.

31. The server of Claim 30, wherein

20 the state information obtaining section obtains at least one of the operation state, the usage state, and the location information of the client device using a method according to a model of the client device.

32. The server of Claim 30, further comprising:

25 a client device control section for controlling the client device, wherein the client device control section comprises a means for displaying to a user at least one of the operation state, the usage state, and the location information of the client device.

33. The server of Claim 30, further comprising:

a search section for searching for the client device or the relay device based on at least one of the address, the operation state, the usage state, and the location information of the client device or the relay device.

5 34. The server of Claim 33, wherein

the search section comprises a means for displaying a list of the client devices found by the search section, each with the operation state.

35. The server of Claim 34, wherein

10 the means displays a list of the client devices connected to each of the relay devices.

36. The server of Claim 34, further comprising:

a client device control section for controlling the client device, wherein the client device control section selects a specific client device from the list to thereby activate a control program for the specific client device.

15 37. The server of Claim 25, wherein

the relay device is provided in the client device.

38. The server of Claim 25, further comprising:

20 a second packet processing device for capsulating/decapsulating packets, the packets being in a first protocol, using a second protocol to thereby establish a tunneling connection with the relay device;

a client device global address management device for managing a global address of the client device in the first protocol, the client device connected to the relay device, in association with a global address of the relay device in the second protocol; and

25 a second routing device for routing a connection to the relay device based on the global address of the client device managed by the client device global address management device.



39. The server of Claim 38, wherein  
the first and second protocols are different.
40. The server of Claim 38, wherein  
the first and second protocols are the same.
- 5 41. The server of Claim 38, further comprising:  
a client device address search section for searching for the global address of the  
client device in the first protocol based on a connection request to the client device.
42. The server of Claim 41, further comprising:  
a connection requester authentication section for authenticating a user who  
10 requested a connection to the client device to thereby permit or deny the connection to  
the client device.
43. The server of Claim 38, further comprising:  
a tunneling connection information management device for managing information  
of the tunneling connection between the relay device and the server, wherein  
15 the tunneling connection information management device sends a notification to  
the relay device of the global address of the server in the second protocol, and obtains the  
global address of the relay device in the second protocol and an entirety or part of the  
global address of the client device in the first protocol.
44. The server of Claim 43, wherein  
20 the tunneling connection information management device authenticates the relay  
device to obtain an authentication result, and, if the authentication result is positive, sends  
the notification.
45. The server of Claim 38, further comprising:  
a filtering processing device for filtering communications to/from the client  
25 device according to predetermined rules.
46. The server of Claim 45, further comprising:

a filtering rule setup section for providing an interface for editing the predetermined rules.